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1 Reasoning about nonatomic operations

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Leslie Lamport
January 1983 **Proceedings of the 10th ACM SIGACT-SIGPLAN symposium on Principles of programming languages POPL '83**
Publisher: ACM Press
Full text available: 📄 pdf(787.02 KB)   Additional Information: full citation, abstract, references, citings

> A method is presented that permits assertional reasoning about a concurrent program even though the atomicity of the elementary operations is left unspecified. It is based upon a generalization of the dynamic logic operator [□]. The method is illustrated by verifying the mutual exclusion property for a two-process version of the bakery algorithm.

2 AVIO: detecting atomicity violations via access interleaving invariants

◧

Shan Lu, Joseph Tucek, Feng Qin, Yuanyuan Zhou
October 2006 **ACM SIGOPS Operating Systems Review , ACM SIGARCH Computer Architecture News , ACM SIGPLAN Notices , Proceedings of the 12th international conference on Architectural support for programming languages and operating systems ASPLOS-XII**, Volume 40., 34 , 41 Issue 5 , 5 , 11
Publisher: ACM Press
Full text available: 📄 pdf(394.45 KB)   Additional Information: full citation, abstract, references, index terms

> Concurrency bugs are among the most difficult to test and diagnose of all software bugs. The multicore technology trend worsens this problem. Most previous concurrency bug detection work focuses on one bug subclass, data races, and neglects many other important ones such as *atomicity violations*, which will soon become increasingly important due to the emerging trend of transactional memory models.This paper proposes an innovative, comprehensive, invariantbased approach called AVIO to dete ...
>
> **Keywords:** atomicity violation, bug detection, concurrency bug, concurrent program, hardware support, program invariant

3 Optimizing memory transactions

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Tim Harris, Mark Plesko, Avraham Shinnar, David Tarditi
June 2006 **ACM SIGPLAN Notices , Proceedings of the 2006 ACM SIGPLAN conference on Programming language design and implementation PLDI '06**, Volume 41 Issue 6